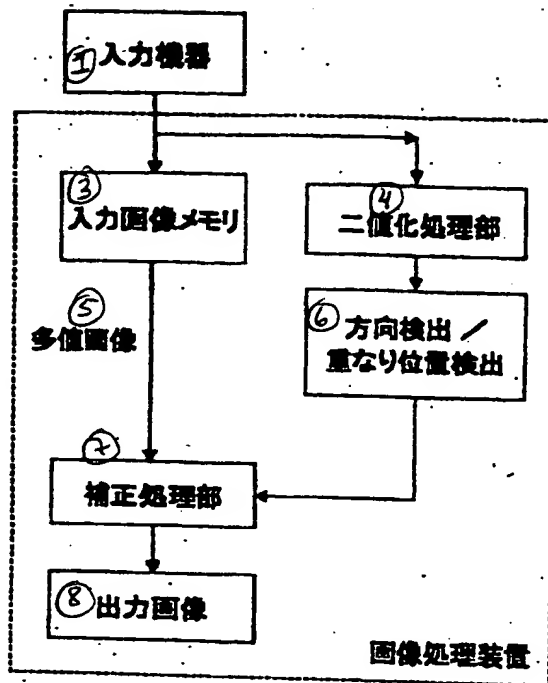


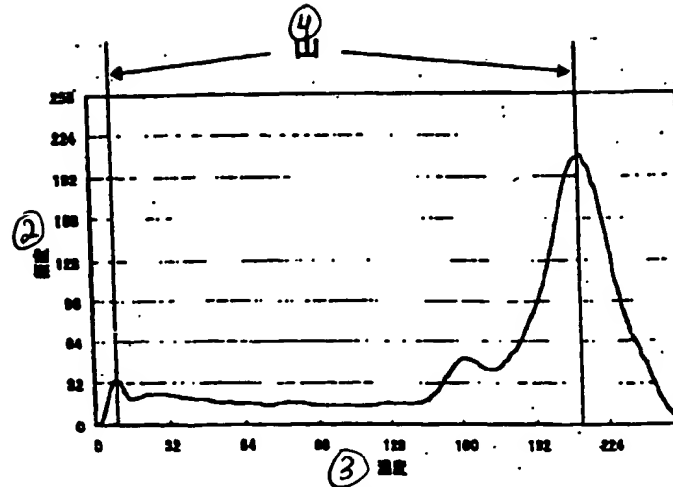
Figure 1



[(1): Input machine; (2): Image processing device; (3): Input image memory; (4): Binarization unit; (5): Multivalent image; (6): Direction detection/overlap position detection; (7): Calibration unit; (8): Output image]

Character

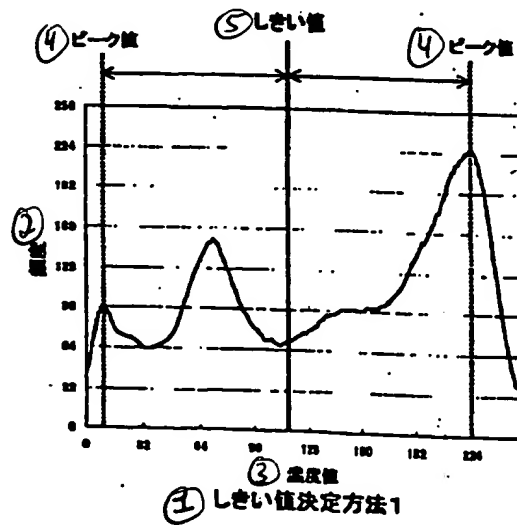
Figure 2



① ヒストグラム上に2つの山ができた例.

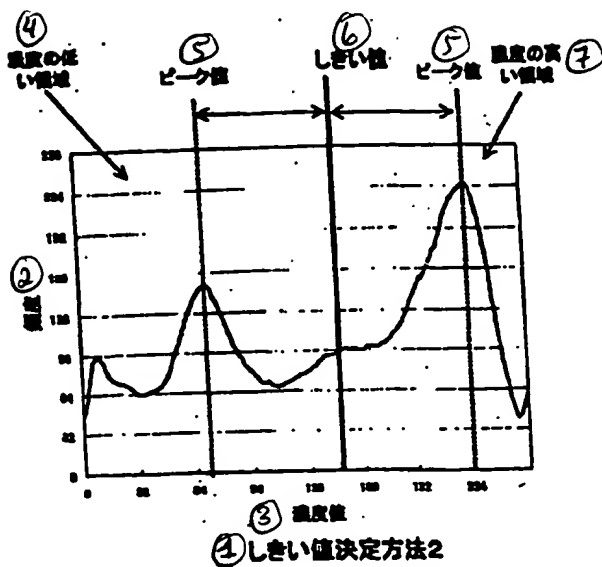
[(1): Case where two peaks have arisen on a histogram; (2): Frequency; (3): Density; (4): Peak]

Figure 3



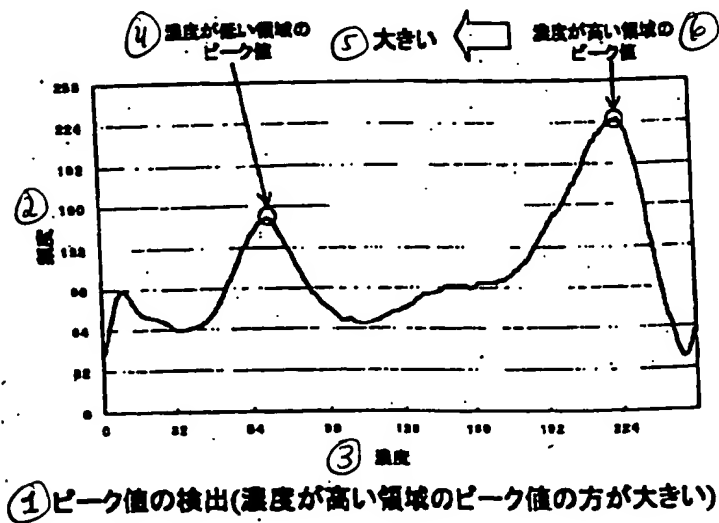
[(1): Threshold value determination method 1; (2): Frequency; (3): Density; (4): Peak value; (5): Threshold value]

Figure 4



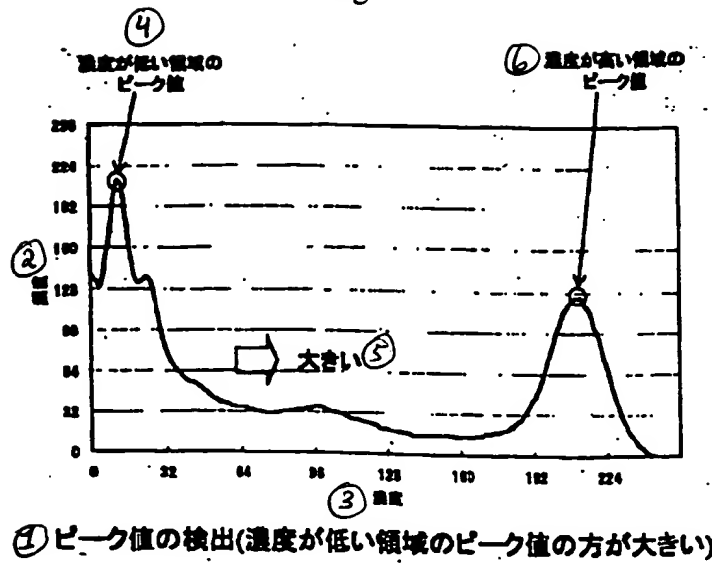
[(1): Threshold value determination method 2; (2): Frequency; (3): Density; (4): Low-density region; (5): Peak value; (6): Threshold value; (7): High-density region]

Figure 5



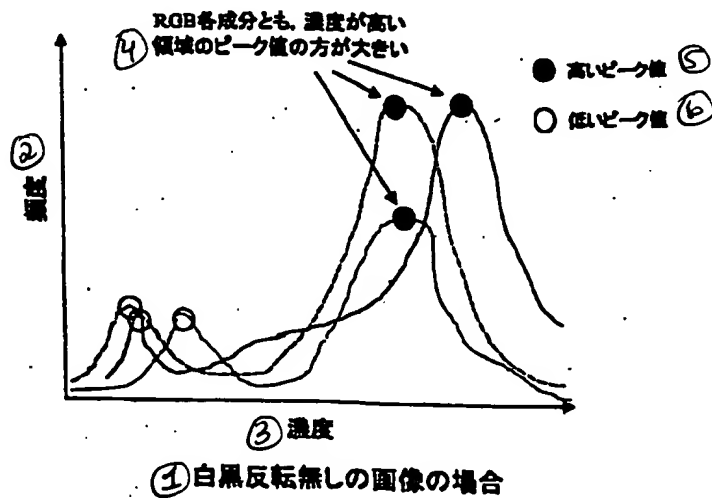
[(1): Peak value detection (higher peak value in the high-density region); (2): Frequency; (3): Density; (4): Low-density region peak value; (5): Higher; (6): High-density region peak value]

Figure 6



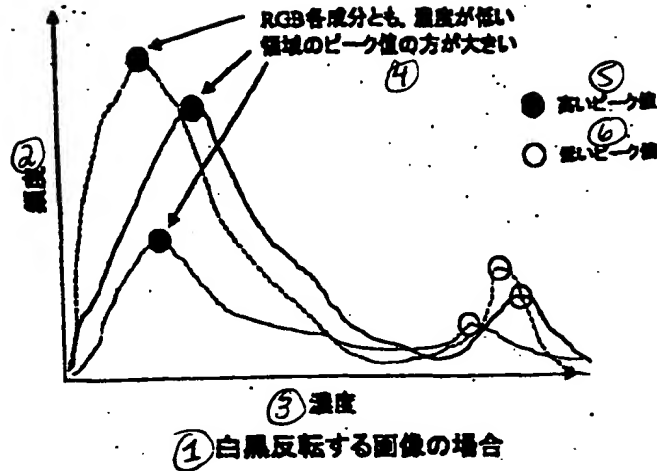
[(1): Peak value detection (higher peak value in the low-density region); (2): Frequency; (3): Density; (4): Low-density region peak value; (5): Higher; (6): High-density region peak value]

Figure 7



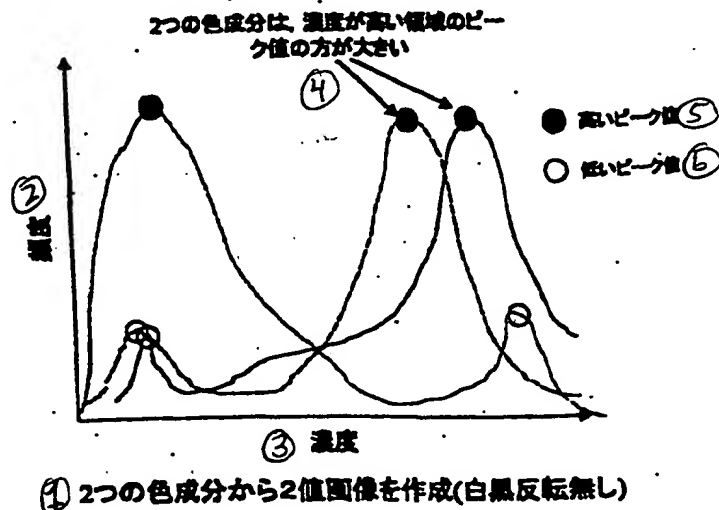
[(1): Case of non-white/black-permuted image; (2): Frequency; (3): Density; (4): Higher peak values in the high-density region with regard to all components R, G, and B; (5): High peak value; (6): Low peak value]

Figure 8



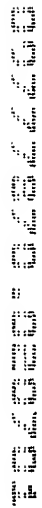
[(1): Case of non-white/black-permuted image; (2): Frequency; (3): Density; (4): Higher peak values in the high-density region with regard to all components R, G, and B; (5): High peak value; (6): Low peak value]

Figure 9



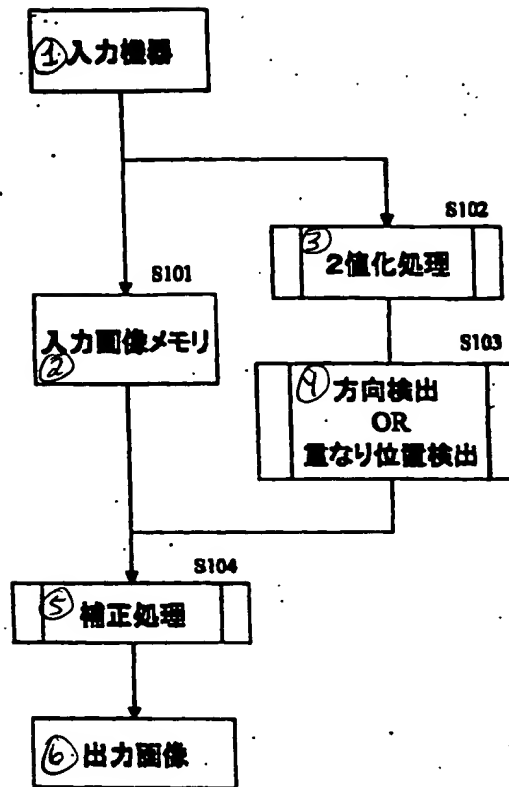
[(1): Preparation of binary image from two color components (white/black permutation absent); (2): Frequency; (3): Density; (4): Higher peak values in the high-density region with regard to two color components; (5): High peak value; (6): Low peak value]

• •



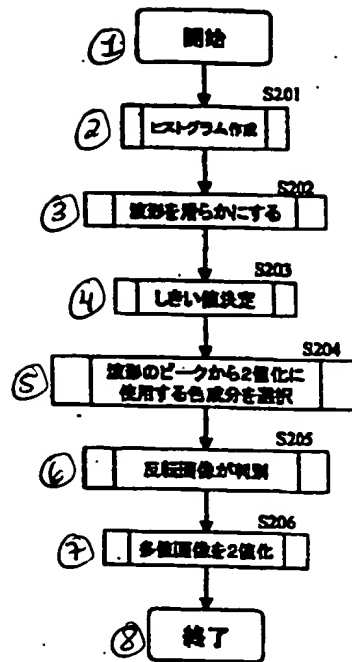
[(1): Preparation of binary image from two color components (white/black permutation present); (2): Frequency; (3): Density; (4): Higher peak values in the low-density region with regard to two color components; (5): High peak value; (6): Low peak value]

Figure 11



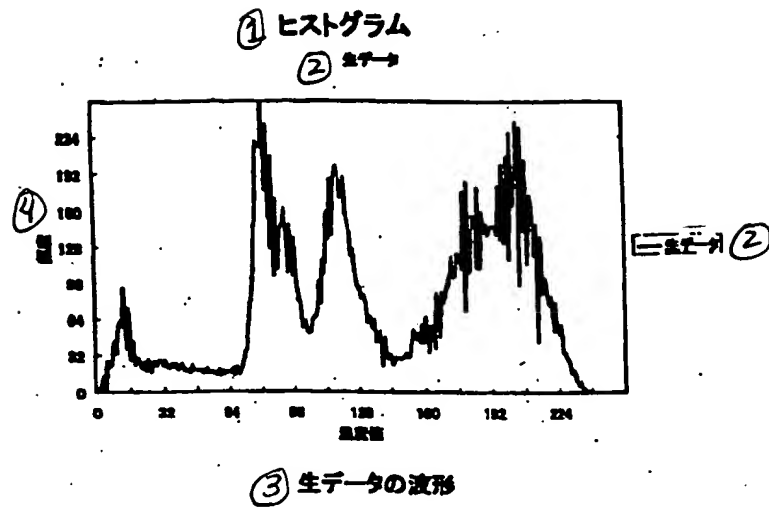
[(1): Input machine; (2): Input image memory; (3): Binarization routine; (4): Direction detection or overlap position detection; (5): Calibration routine; (6): Output image]

Figure 12



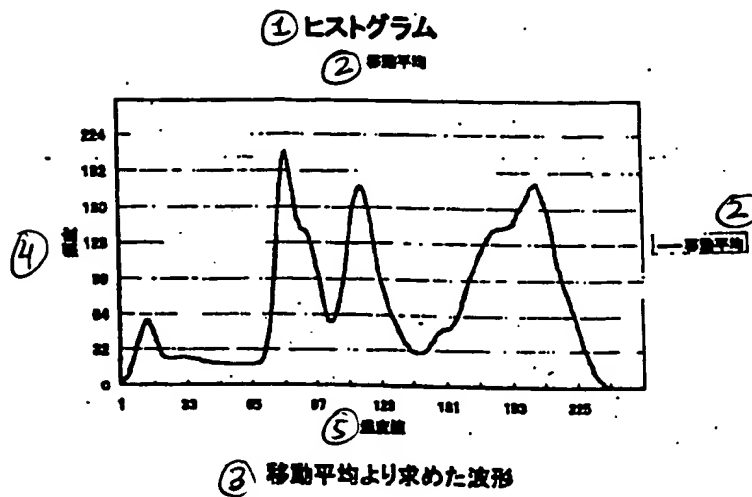
[(1): Begin; (2): Histogram preparation; (3): Wave shape flattening; (4): Threshold value determination; (5): Selection of a color component to be used for binarization based on the wave peak; (6): Judgment of image permutation; (7): Binarization of multivalent image; (8): End]

Figure 13



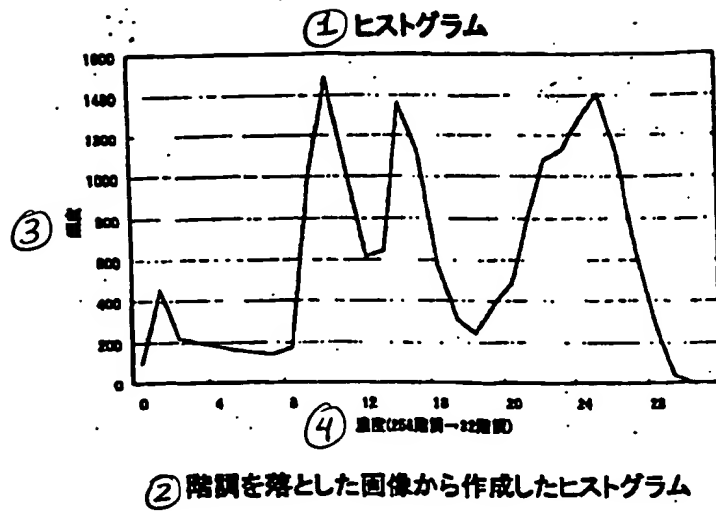
[(1): Histogram; (2): Raw data; (3): Density value; (4): Frequency]

Figure 14



[(1): Histogram; (2): Mobile average; (3): Wave shape calculated based on the mobile average; (4): Frequency]

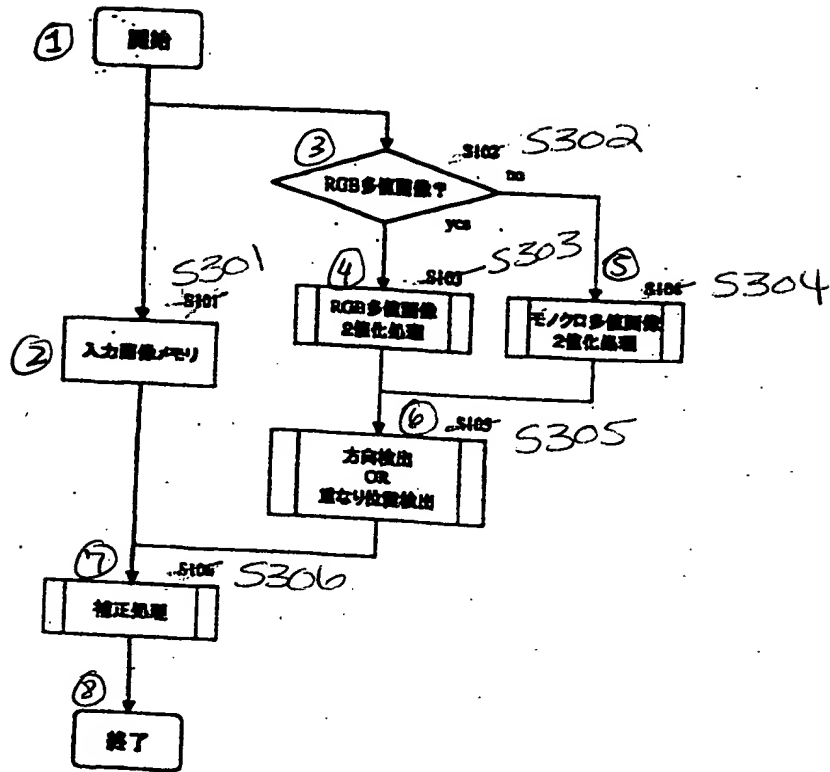
Figure 15



[(1): Histogram; (2): Histogram prepared from a tone-downgraded image; (3): Frequency; (4): Density (256th tone -> 32nd tone)]

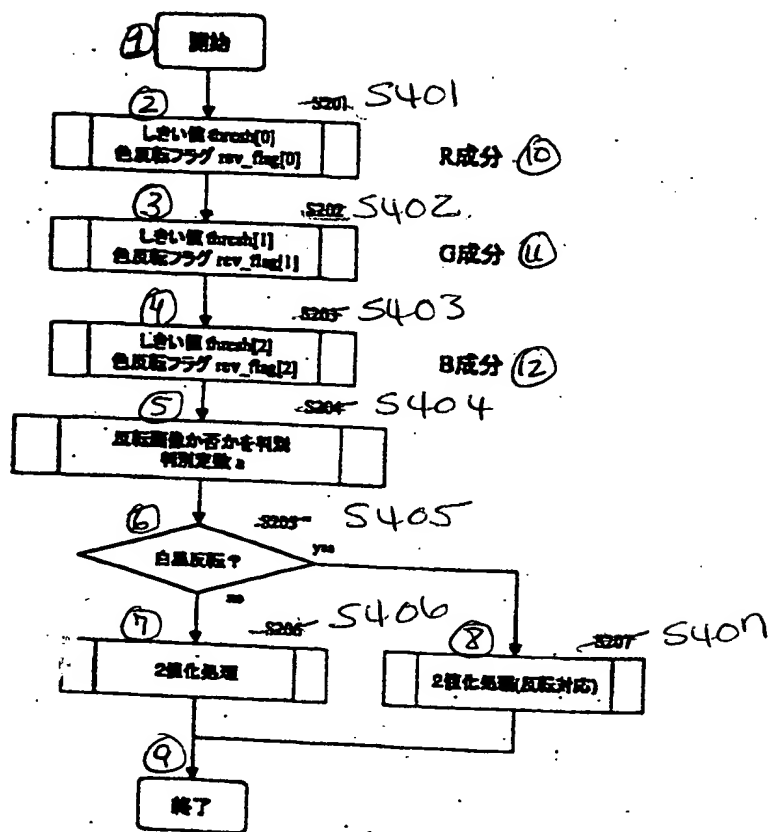
20200926092704

Figure 16



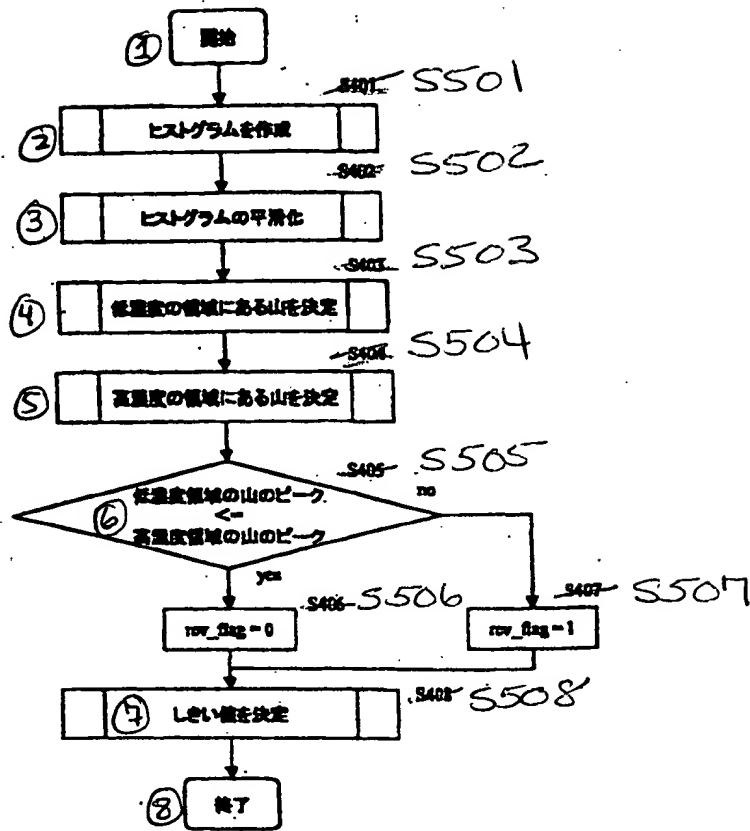
[(1): Begin; (2): Input image memory; (3): RGB multivalent image?; (4): RGB multivalent image binarization routine; (5): Monochrome multivalent image binarization routine; (6): Direction detection or overlap position detection; (7): Calibration routine; (8): End]

Figure 17



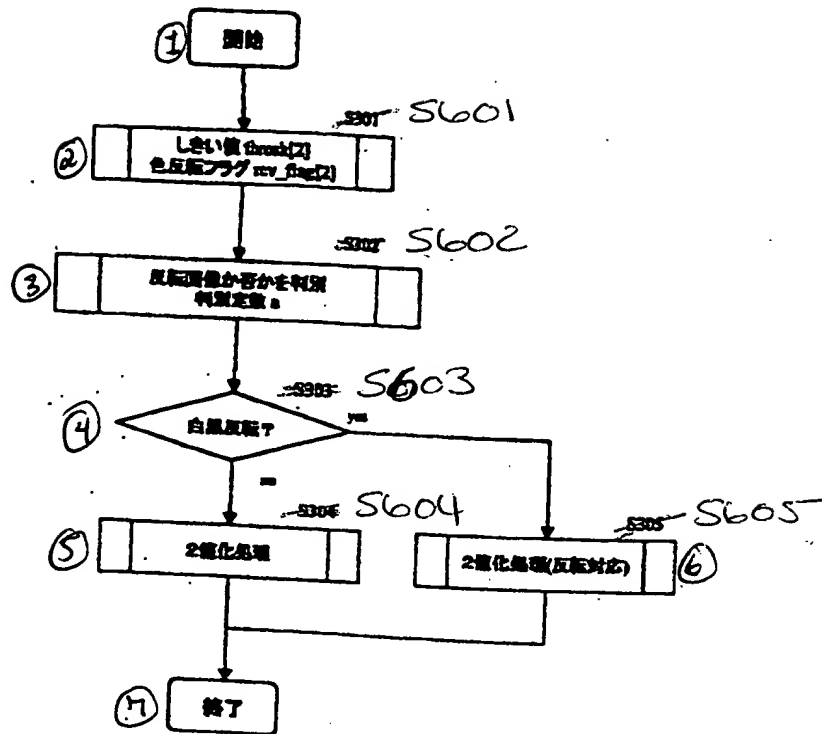
[(1): Begin; (2): Threshold value thresh [0] and color permutation flag rev flag [0]; (3): Threshold value thresh [1] and color permutation flag rev flag [1]; (4): Threshold value thresh [2] and color permutation flag rev flag [2]; (5): Judgment of image permutation or lack thereof, judgment constant a; (6): White/black permutation?; (7): Binarization routine; (8): Binarization routine (in response to permutation); (9): End; (10): Component R; (11): Component G; (12): Component B]

Figure 18



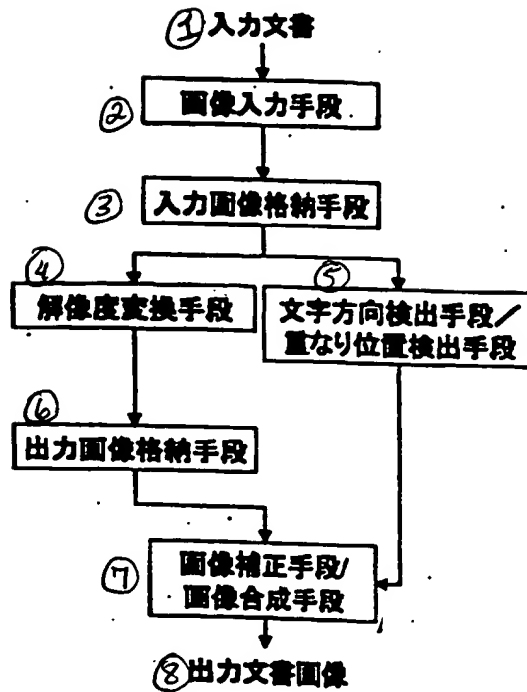
[(1): Begin; (2): Histogram preparation; (3): Histogram flattening; (4): Selection of a low-density region peak; (5): Selection of a high-density region peak; (6): Low-density region peak, high-density region peak ; (7): Threshold value determination; (8): End]

Figure 19



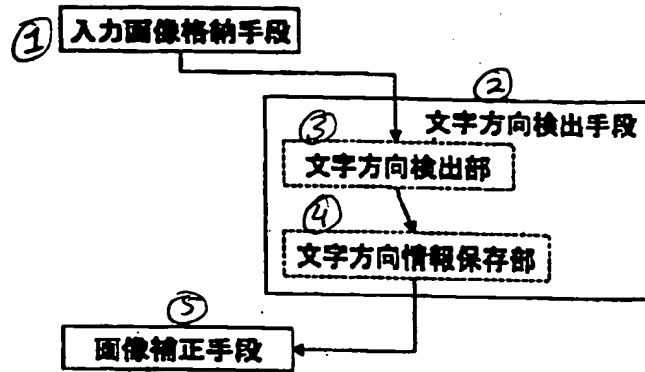
[(1): Begin; (2): Threshold value thresh [2] and color permutation flag rev flag [2]; (3): Judgment of image permutation or lack thereof, judgment constant a; (4): White/black permutation?; (5): Binarization routine; (6): Binarization routine (in response to permutation); (7): End]

Figure 20



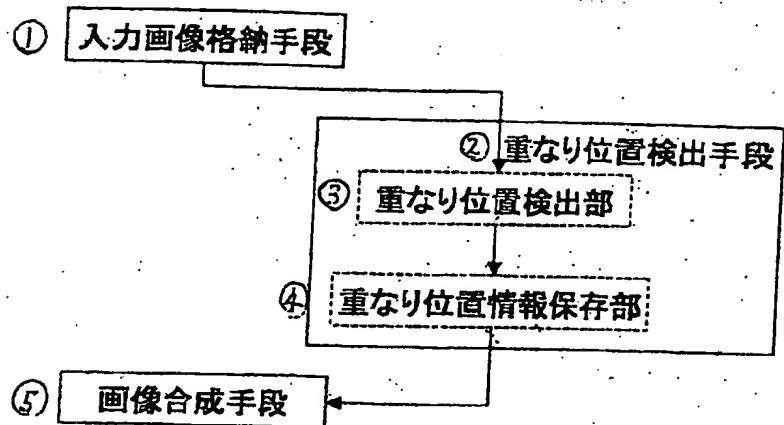
[(1): Input document; (2): Image input mechanism; (3): Input image storage mechanism; (4): Resolution conversion mechanism; (5): Character direction detection mechanism/overlap position detection mechanism; (6): Output image storage mechanism; (7): Image calibration mechanism/image synthesis mechanism; (8): Output document image]

Figure 21



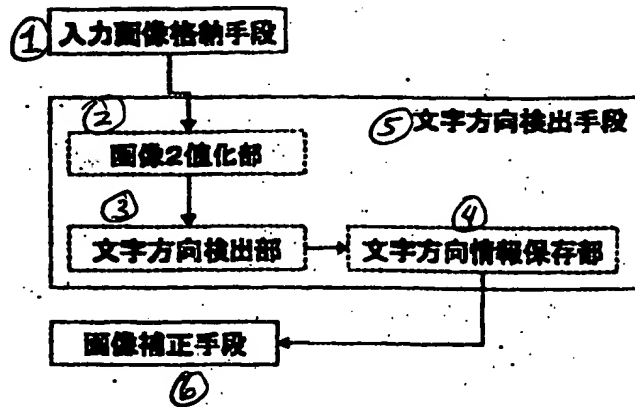
[(1): Input image storage mechanism; (2): Character direction detection mechanism; (3): Character direction detection unit; (4): Character direction information storage unit; (5): Image calibration mechanism]

Figure 22



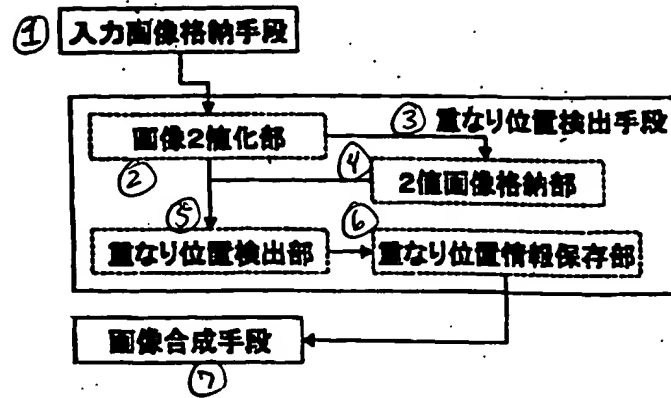
- (1): Input image storage mechanism;
 (2): Overlap position detection mechanism;
 (3): Overlap position detection unit;
 (4): Overlap position information storage unit;
 (5): Image synthesis mechanism.

Figure 23

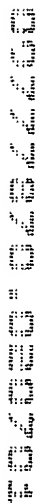


- [(1): Input image storage mechanism; (2): Image binarization unit; (3): Character direction detection unit; (4): Character direction information storage unit; (5): Character direction detection mechanism; (6): Image calibration mechanism]

Figure 24

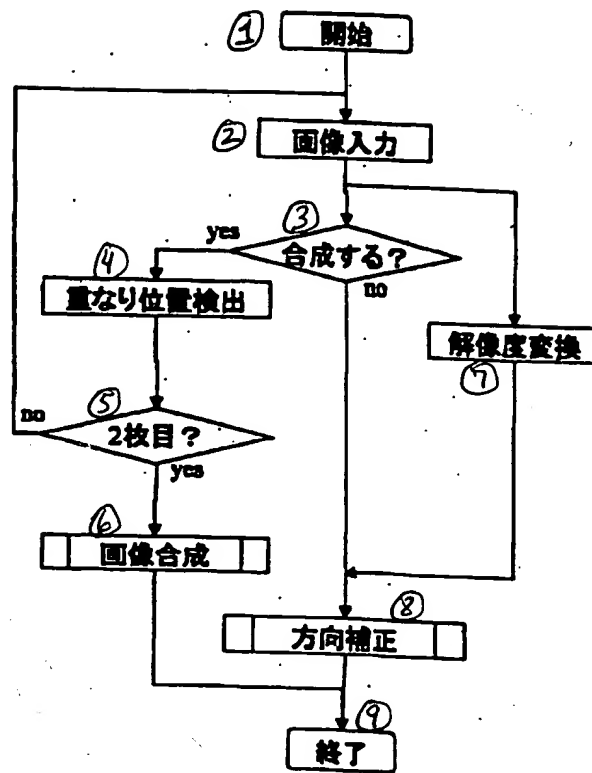


[(0): Input image storage mechanism; (2): Image binarization unit; (3): Overlap position detection mechanism; (4): Binary image storage unit; (5): Overlap position detection unit; (6): Overlap position information storage unit; (7): Image synthesis mechanism]



[(0): Input image; (2): Transferred data; (3): Decoding direction; (4): Partial extraction; (5): Direction detection; (6): Resolution conversion; (7): Image calibration; (8): Output image]

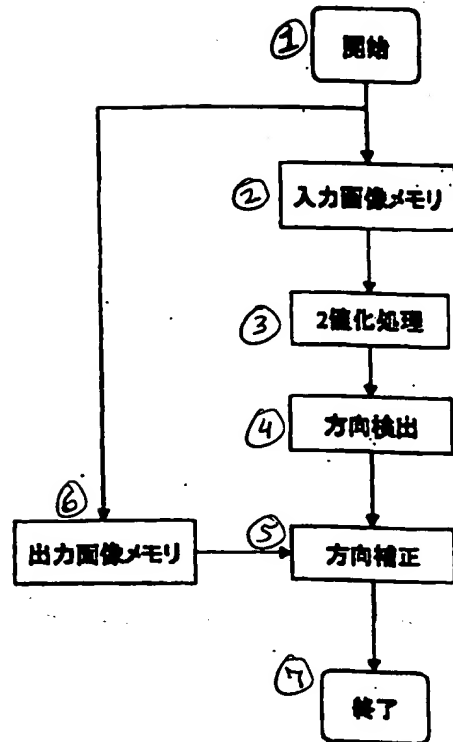
Figure 26



[(1): Begin; (2): Image input; (3): Synthesis?; (4): Overlap position detection; (5): Second?; (6): Image synthesis; (7): Resolution conversion; (8): Direction calibration; (9): End]

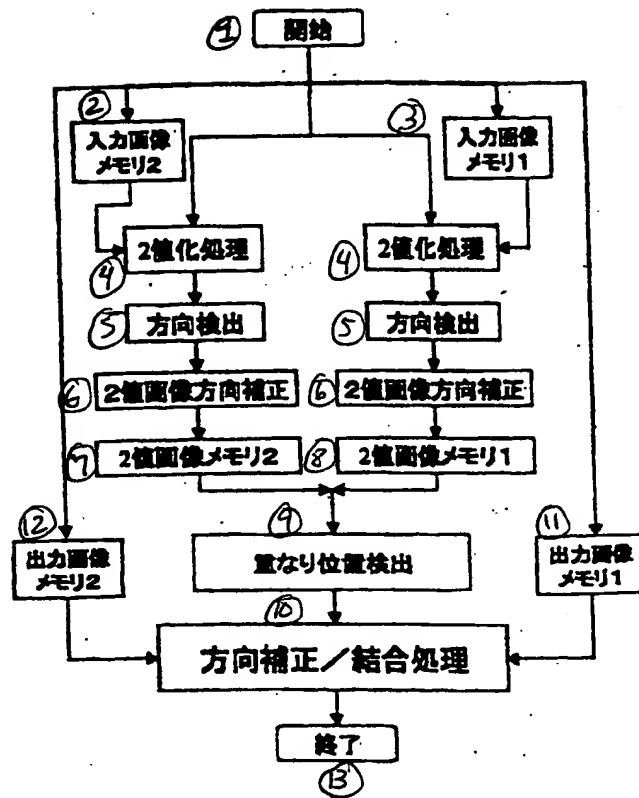
0077570-000794

Figure 27



[(1): Begin; (2): Input image memory; (3): Binarization routine; (4): Direction detection; (5): Direction calibration; (6): Output image memory; (7): End]

Figure 28

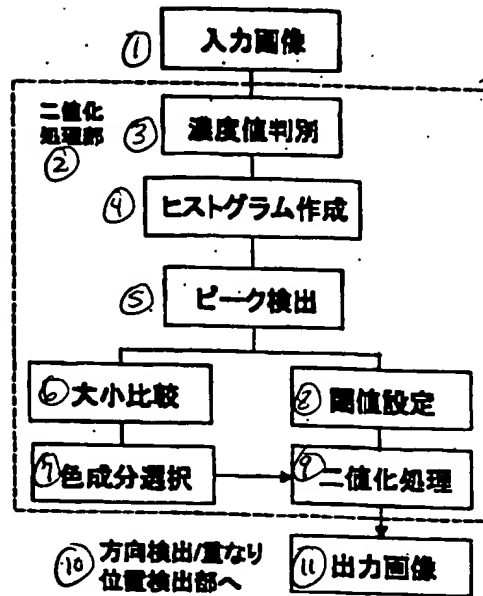


0077870-000204

BINARY.

[(1): Begin; (2): Input image memory 2; (3): Input image memory 1; (4): Binarization routine; (5): Direction detection; (6): Binarized image direction calibration; (7): Binarized image memory 2; (8): Binarized image memory 1; (9): Overlap position detection; (10): Direction calibration/synthesizing routine; (11): Output image memory 1; (12): Output image memory 2; (13): End]

Figure 29



[(1): Input image; (2): Binarization unit; (3): Density value judgment; (4): Histogram preparation; (5): Peak detection; (6): Hierarchical comparison; (7): Color component selection; (8): Threshold value designation; (9): Binarization routine; (10): To direction detection/overlap position detection unit; (11): Output image]